

# ELASTOMERS THAT ENDURE

**T**he Space Shuttle generates an enormous amount of heat during liftoff. To protect the launch structure, NASA has researched and experimented with various heat-protecting coatings since the 1980s. In the early 1990s, NASA joined with Dow Corning® to develop some type of protection for the Mobile Launcher Platform, the gantry structure, and other valuable equipment exposed to heat and chemicals given off by the Shuttle during liftoff. Through assistance from NASA's Kennedy Space Center, Dow Corning developed the 3-6376 Fast Cure Elastomer, a strong protective coating with applications in a variety of fields.

Previously, NASA used silicate coatings that simply failed to adequately protect, which resulted in the frequent recoating of the damaged areas. Of particular concern were the preservation of the weather protection curtains and the launch pad structure, which received most of the damage and required recoating following each launch. The enormous expense of this repeat procedure led Kennedy's Materials Science Laboratory to investigate the possibilities of ablative-type coatings. An ablative coating is a material that forms an insulating char when exposed to extreme heat. It is the char that protects the underlying coating and surface. The investigations resulted in the creation of a silicone ablative material known as the Dow Corning 3-6376 Fast Cure Elastomer.

By definition, an elastomer is a material that has significant elastic qualities. In this case, the 3-6376 elastomer is a 100 percent silicone material, giving it an extremely high level of elasticity. The Fast Cure Elastomer does not require a primer coating. The material is simply applied through the

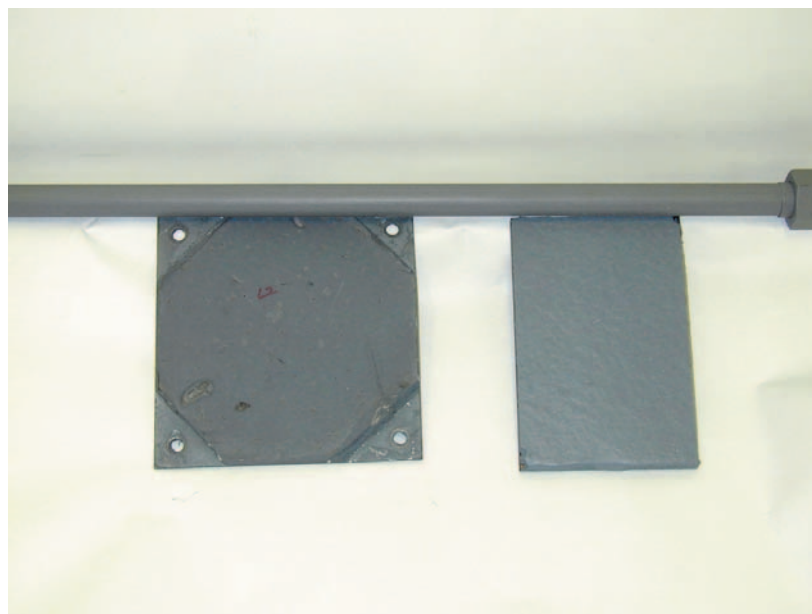
use of special spraying equipment and techniques. These developments have provided some major benefits.

The new product saves NASA money on materials, equipment, and labor. Because the new coating is sprayed onto large areas, fewer solvents are needed to protect the delicate area surrounding the launch pad. The decreased amounts of solvent and specialized spray techniques also help reduce the amount of overspray. The previously used trowel application is no longer necessary—since less work is performed, fewer materials are expended.

Less work also means less time wasted. The Fast Cure Elastomer reduces the turnaround time for reuse of the launch structure because of fewer refurbishing operations. This means that NASA is not held up due to repairs when it comes time to launch another Shuttle. To date, the Agency has launched dozens of successful missions without the need for recoating.

The elastomer is currently used in the automotive and aerospace industries and serves as an exceptional coating for engine compartment firewalls. Dow Corning's elastomer has also proved to be an effective sealant. The product offers widespread benefits for NASA and the commercial sector. As commercial opportunities expand, the Fast Cure Elastomer will continue to provide its unique and efficient coating benefits to those who use it. ♦

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*Dow Corning's® 3-6376 Fast Cure Elastomer was tested at NASA's Kennedy Space Center on various panels and tubing before being applied to the launch structure.*